

Electrochemically Modulated Gas/Liquid Separation Technology for In Situ Resource Utilization Process Streams, Phase I

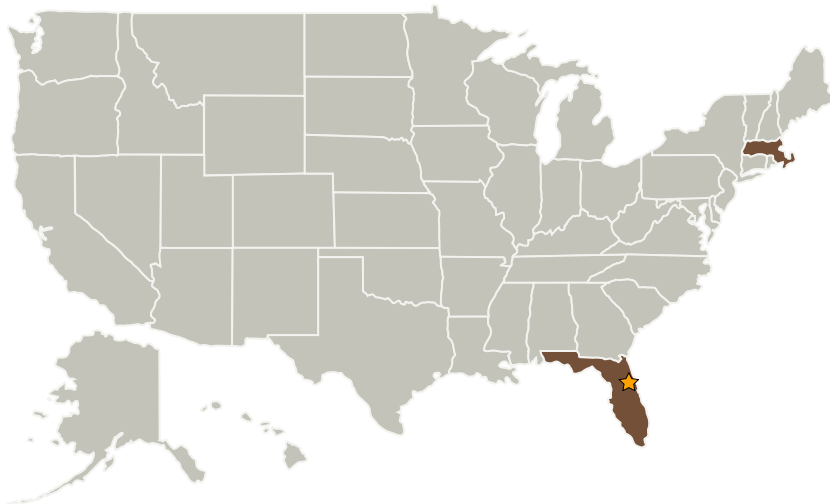
Completed Technology Project (2006 - 2006)



Project Introduction

In this phase I program MicroCell Technologies, LLC (MCT) proposes to demonstrate the feasibility of an electrochemically modulated phase separator for in situ processing and refining in future space missions. Two-phase (liquid and gas) flow can be a vital part of many life support and or thermal management systems which will be supported using in situ resources on spacecraft and on future habitations on the Moon and Mars. In this phase I program, we propose to demonstrate the use of an innovative electrochemically modulated gas/liquid separation system for use in 0-g conditions. In phase I, we propose to develop a supported ionic liquid membrane electrode assembly and demonstrate the separation of CO₂ from water. The phase II program will optimize this system, as well as adapt this technology to selectively separate other gases of interest for ISRU applications such as nitrogen and oxygen in a two-phase flow. In phase II we will also develop innovative reactor designs to minimize size and weight for space applications.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★ Kennedy Space Center(KSC)	Lead Organization	NASA Center	Kennedy Space Center, Florida
Reactive Innovations, LLC	Supporting Organization	Industry	Westford, Massachusetts



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Kennedy Space Center (KSC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Primary U.S. Work Locations

Florida

Massachusetts

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX07 Exploration Destination Systems
 - └ TX07.1 In-Situ Resource Utilization
 - └ TX07.1.3 Resource Processing for Production of Mission Consumables